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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/766,863	01/19/01	POWELL	T 15966-641 CU

HM22/1022

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EXAMINER	
CHUNDURU, S	
ART UNIT	**PAPER NUMBER**
1656	6

DATE MAILED: 10/22/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary	Application No.	Applicant(s)	
	09/766,863	POWELL ET AL.	
	Examiner	Art Unit	
	Suryaprabha Chunduru	1656	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 January 2001* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

1. Claims 1-20 are pending.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-2, 4-6, 8, 10-13, 15-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Friend et al. (USPN. 6,165,709).

Friend et al. teach a method for drug (test compound) target screening wherein Friend et al. disclose that the method comprises (i) providing plurality of cells comprising plurality of cells (wild-type cells (reference cells), modified cells), contacting each of the cells with a drug (test compound) and measuring expression of specific gene(s) in each of these cells by comparing the expression of genes with that of a reference cell and modification or alteration in gene expression indicates the mode of action (function) of said test compound (see column 11, lines 5-30, column 64, lines 65-67 and column 65, claim 41, lines 1-14, column 66, lines 1-12). Friend et al. also disclose that the expression can be measured by quantitative gene expression technologies (see column 16, lines 26-42) using different fluorescence dyes and or with fluorescent probe hybridization techniques (see column 31, lines 44-67, column 32, lines 1-67, and column 33, lines 1-21). Further, Friend et al. disclose that (i) the detection of gene expression relative to the reference gene was the difference of an order of about 3-fold to about 5-fold (see column 33, lines 35-47); (ii) the method can be carried out using cells form mammalian cells derived from

mice and humans (see column 37, lines 60-65); and (iii) the drugs or test compounds include small molecules of therapeutic interest, naturally occurring factors such as endocrine, paracrine, or autocrine factors or factors interacting with cell receptors (see column 7, lines 51-60). Therefore, the disclosure of friend et al. meets the limitations in the instant claims.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

a) Claims 3, 7, and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Friend et al. (USPN. 6,165,709) and in view of Kinzler et al. (USPN. 5,695,937).

Friend et al. teach a method for drug (test compound) target screening wherein Friend et al. disclose that the method comprises (i) providing plurality of cells comprising plurality of cells (wild-type cells (reference cells), modified cells), contacting each of the cells with a drug (test compound) and measuring expression of specific gene(s) in each of these cells by comparing the

expression of genes with that of a reference cell and modification or alteration in gene expression indicates the mode of action (function) of said test compound (see column 11, lines 5-30, column 64, lines 65-67 and column 65, claim 41, lines 1-14, column 66, lines 1-12). Friend et al. also disclose that the expression can be measured by quantitative gene expression technologies (see column 16, lines 26-42) using different fluorescence dyes and or with fluorescent probe hybridization techniques (see column 31, lines 44-67, column 32, lines 1-67, and column 33, lines 1-21). Further, Friend et al. disclose that (i) the detection of gene expression relative to the reference gene was the difference of an order of about 3-fold to about 5-fold (see column 33, lines 35-47); (ii) the method can be carried out using cells form mammalian cells derived from mice and humans (see column 37, lines 60-65); and (iii) the drugs or test compounds include small molecules of therapeutic interest, naturally occurring factors such as endocrine, paracrine, or autocrine factors or factors interacting with cell receptors (see column 7, lines 51-60). However, Friend et al. did not disclose measuring three or more genes in different cell types.

Kinzler et al. teach a method for serial analysis of gene expression wherein Kinzler et al. disclose rapid analysis of gene expression in different cell types or in the same cell type under different physiological conditions, which allow the analysis of a large number of gene transcripts (see column 2, lines 20-52).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the method of drug target screening as taught by friend et al. with the method of Kinzler et al. which is applicable to analyze more than two genes because Friend et al. states that 'there is a need for improved (faster and less expensive) methods for characterizing activities and targets of drugs based on effective interpretation of expression

data '. One form of such improvement, expressly motivated by Kinzler et al. is the use serial analysis of gene expression "to provide a method for the rapid quantitative and qualitative analysis of transcripts.' An ordinary practitioner would have been motivated to combine the method of Friend et al. with the method of Kinzler et al. in order to achieve the expected advantage of a rapid and cost-effective method for screening a test compound based on gene expression analysis.

b) Claims18 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Friend et al. (USPN. 6,165,709) and in view of Bieche et al. (Clinical Chem., 45 (8): 1148-1156, 1999).

Friend et al. teach a method for drug (test compound) target screening wherein Friend et al. disclose that the method comprises (i) providing plurality of cells comprising plurality of cells (wild-type cells (reference cells), modified cells), contacting each of the cells with a drug (test compound) and measuring expression of specific gene(s) in each of these cells by comparing the expression of genes with that of a reference cell and modification or alteration in gene expression indicates the mode of action (function) of said test compound (see column 11, lines 5-30, column 64, lines 65-67 and column 65, claim 41, lines 1-14, column 66, lines 1-12). Friend et al. also disclose that the expression can be measured by quantitative gene expression technologies (see column 16, lines 26-42) using different fluorescence dyes and or with fluorescent probe hybridization techniques (see column 31, lines 44-67, column 32, lines 1-67, and column 33, lines 1-21). Further, Friend et al. disclose that (i) the detection of gene expression relative to the reference gene was the difference of an order of about 3-fold to about 5-fold (see column 33, lines 35-47); (ii) the method can be carried out using cells form

mammalian cells derived from mice and humans (see column 37, lines 60-65); and (iii) the drugs or test compounds include small molecules of therapeutic interest, naturally occurring factors such as endocrine, paracrine, or autocrine factors or factors interacting with cell receptors (see column 7, lines 51-60). However, Friend et al. did not teach measuring gene expression by real-time polymerase chain reaction.

Bieche et al. teach a method for measuring gene expression using real-time reverse transcription polymerase chain reaction (real time RT-PCR) based on fluorescent TaqMan methodology (see page 1150, paragraphs 1-8 and page 1151, paragraphs 1-3).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the method of drug target screening as taught by friend et al. with the method of Bieche et al. which is applicable to analyze gene expression by real-time polymerase chain reaction because Friend et al. states that 'there is a need for improved (faster and less expensive) methods for characterizing activities and targets of drugs based on effective interpretation of expression data '. One form of such improvement, expressly motivated by Bieche et al. is the use real-time polymerase chain reaction "to provide a method for the rapid quantitative analysis of transcripts.' An ordinary practitioner would have been motivated to combine the method of Friend et al. with the method of Bieche et al. in order to achieve the expected advantage of a sensitive and cost-effective method for screening a test compound based on real-time RT-PCR for gene expression analysis.

No claims are allowable.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Suryaprabha Chunduru whose telephone number is 703-305-

1004. The examiner can normally be reached on 8.30A.M. - 4.30P.M, Mon - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Jones can be reached on 703-308-1152. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-0294 for regular communications and - for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0196.

Suryaprabha Chunduru
October 17, 2001

JEFFREY FREDMAN
PRIMARY EXAMINER